

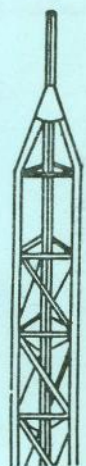
# ANCHORAGE AMATEUR RADIO CLUB

PRESIDENT- LANCE DUNBAR-AL7BK-337-6297  
 CLUB PHONE:345-0719

M A Y 1 9 8 7

\*\*\*\*\*  
 WHAT'S GOING ON THESE DAYS !!!  
 \*\*\*\*\*

- MAY 1 . . General Meeting 7 PM Spenard Rec Center 2020 W. 48th Street
- MAY 2 . . "WALK FOR HOPE" See Bill Reiter if you can Help
- MAY 9/10. . "Messages to MOM" Sear Mall Offer your Help. See Lance.
- MAY 13 . . Board Meeting 7 PM Hope Cottage Meeting Room Bering Street  
 between Northern Lights and Benson
- MAY 30 . . PARKA Social Meeting 10 AM TBA
- JUNE 5 . . General Meeting 7 PM Spenard Rec Center 2020 W. 48th Street
- JUNE 10 . . Board Meeting 7 PM Hope Cottage Meeting Room Bering Street  
 between Northern Lights and Benson



## VEC NEWS - NEW HAMS AND UPGRADES

### ANCHORAGE

EDWARD BOSCO, JR.		NO LICENSE	TECHNICIAN
CINDY ENGLISH	WL7BMK	NOVICE	TECHNICIAN
WILLIAM THOMAS, JR.	WL7BJA	NOVICE	TECHNICIAN

### FAIRBANKS

JAMES CHAPMAN		NO LICENSE	TECHNICIAN
JAMES DIXON	NL7HI	TECHNICIAN	EXTRA
CHARLES RUERUP, JR.	WL7BEM	ADVANCED	EXTRA
ROBERT SCOGGIN JR	WL7BLN	GENERAL	EXTRA
CAROLYN WILLIAMS		NO LICENSE	TECHNICIAN

submitted by Roger Hansen, KL7HFQ, VEC Director)

EDITOR: HARVEY E. ROOKUS - NL7DK 333-4693  
 3310 CHECKMATE DRIVE  
 ANCHORAGE, ALASKA 99508



## T H E P R E Z S E Z . . . . .

Hoo! Boy!!! I thought I'd never get enough of this clutter cleared away from the keyboard in time to do this monthly column. Got the Heathkit SB-104 torn down for maintenance, and tools and schematics are scattered all over the work area. You'd think that I'd be a bit more organized than that!!!

Happy to report that I have found a good trio for the Officer Nominating Committee. Howard Hornsby, AL7GS, "chair-in-charge", is working with Nancy Laws, NL7HK, and Sheri Runyan, AL7FJ ("railroaded at the April meeting"), to come up with nominees who are guaranteed to "protest vigorously," but will eventually be persuaded to do the best possible jobs in the club's behalf. If you want to help your club and Ham Radio, give one of them a call and get your name on the list of nominees. YOU CAN MAKE A DIFFERENCE!

As I write this, I am saddened by the apparent lack of response to the annual Mothers' Day event. Only 5 of you bothered to volunteer your services when the signup sheet was circulated at the April meeting!! That's appalling!! Here's an opportunity to help others feel good about something by sending a simple greeting to their loved ones, and only a few of you seem to care. Maybe Wayne Green is right. Maybe Ham Radio in America is fading into the sunset. You seem to want all the privileges, but none of the responsibilities. Wake up and get involved, and help out when you can.

Gene Mockerman, KL7GID, net manager for the Motley Group, has announced that the annual picnic will be held on July 18 and 19 at Byers Lake, mile 149 Parks Highway (I think). Plan to be there. Gene and his group of volunteers are also putting the finishing touches on "all new" Motley Group directory, an invaluable listing of active hams around the state. Last year's directory contained 307 listings.

For you Novices and Techs, a new net has formed at 28.400 MHZ, USB. It meets daily at 8:00 PM local time.

Also for Novices and Techs, and anyone else who would like to increase code speed: I am willing to conduct a bi-weekly code practice net on either 15 or 10 meters. Please let me know so that I can get it organized. I can run the speed from 5 wpm to as high as you desire, but I need to know ahead of time so that I can plan for it.

I am pleased to announce that, with the help of the "Club Surplus Equipment Scrounger", Rick Marvin (KL7YF), Fred Toliver (KL7HM) has shipped repeater equipment to the hams on the "Big Island" in Hawaii to help them establish a needed repeater there.

Not much else going on around here, except that the HF bands are getting more and more interesting as propagation improves. Improved opportunities to work that "One you've been looking for" or the rare DX. AL7BB reports that he has been averaging about 80 contacts in 3 or 4 hours on 20 meters. Might want to check it out.

73's

Lance, AL7BK



April 13, 1987

To: - All Members

Anchorage Amateur Radio Club  
to NL7DK (Harvey Gorbun)  
3318 Checkmate Drive  
Anchorage, AL 99508

We, again, want to express our sincere appreciation to the Anchorage Radio Club membership for the "Honorary Life Memberships" to the AARC.

The certificates were delivered to our stations today. They will, proudly, be displayed in our "shade" at Montana Creek.

Thank you, all!

73" and 88"

Del and Gormary

KL7JKW es KL7LA



# TECHNICIAN QUESTION POOL

# GENERAL QUESTION POOL

Table 2 (continued)

## Element 3A (Technician) Question Pool

### SUBELEMENT 3AA

3A-1.1	3B-2.7	p 2-7
3A-1.2	3B-2.8	p 2-8
3A-2.1	3B-2.9	p 2-7
3A-2.2	3B-3.1	p 2-4
3A-2.3	3B-3.2	p 2-4
3A-2.4	3B-3.3	p 2-4
3A-2.5	3B-3.4	p 2-4
3A-2.6	3B-3.5	p 2-4
3A-2.7	3B-3.6	p 2-4
3A-2.8	3B-3.7	p 2-5
3A-3.1	3B-3.9	p 2-6
3A-3.2	3B-3.10	p 2-6
3A-3.3	3B-3.11	p 2-6
3A-3.4	3B-3.13	p 2-6
3A-4.2	3B-6.4	p 2-12
3A-4.4	3B-6.5	p 2-12
3A-4.5	3B-6.6	p 2-12
3A-4.6	3B-6.7	p 2-12
3A-5.1	3B-6.8	p 2-9
3A-5.2	3B-6.9	p 2-12
3A-5.3	3B-6.10	p 2-12
3A-5.4	3B-9.1	p 2-16
3A-6.3	3B-9.2	p 2-16

### SUBELEMENT 3AC

3C-1.1	p 3-1
3C-1.2	p 3-2
3C-1.3	p 3-2
3C-1.4	p 3-2
3C-1.5	p 3-2
3C-1.8	p 3-3
3C-1.11	p 3-2
3C-1.12	p 3-2
3C-1.14	p 3-3
3C-2.1	p 3-3
3C-2.2	p 3-3
3C-2.5	p 3-3
3C-2.6	p 3-3
3C-3.1	p 3-5
3C-3.2	p 3-5
3C-3.5	p 3-5
3C-4.1	p 3-3
3C-4.2	p 3-3
3C-4.3	p 3-2
3C-4.4	p 3-3
3C-6.1	p 3-9
3C-6.3	p 3-3
3C-8.1	p 3-11
3C-8.2	p 3-11
3C-9.1	p 3-11
3C-9.2	p 3-11
3C-9.3	p 3-11
3C-9.4	p 3-11
3C-9.5	p 3-11
3C-9.6	p 3-11

### SUBELEMENT 3AD

3D-1.1	p 4-1
3D-1.2	p 4-1
3D-1.3	p 4-1
3D-1.4	p 4-1
3D-2.1	p 4-5
3D-2.2	p 4-5
3D-2.3	p 4-5
3D-2.5	p 4-5
3D-2.6	p 4-5
3D-3.3	p 4-18
3D-3.4	p 4-18
3D-4.1	p 4-8
3D-4.2	p 4-8
3D-4.3	p 4-8
3D-4.4	p 4-8
3D-4.5	p 4-8
3D-4.6	p 4-8
3D-4.7	p 4-8
3D-4.8	p 4-8
3D-4.9	p 4-8
3D-4.10	p 4-8
3D-4.11	p 4-8
3D-4.12	p 4-8
3D-4.13	p 4-8
3D-4.14	p 4-8
3D-4.15	p 4-8
3D-4.16	p 4-8
3D-4.17	p 4-8
3D-4.18	p 4-8
3D-4.19	p 4-8
3D-4.20	p 4-8

3D-8.5 p 4-10

3D-11.1 p 4-19

3D-11.2 p 4-18

3D-11.3 p 4-19

3D-11.4 p 4-19

3D-11.5 p 4-19

3D-12.1 p 4-16

3D-14.1 p 4-18

3D-14.2 p 4-18

3D-14.3 p 4-18

3D-14.4 p 4-18

3D-14.5 p 4-18

3D-14.6 p 4-18

3D-14.7 p 4-18

3D-14.8 p 4-18

3D-14.9 p 4-18

3D-14.10 p 4-18

3D-14.11 p 4-18

3D-14.12 p 4-18

3D-14.13 p 4-18

3D-14.14 p 4-18

3D-14.15 p 4-18

3D-14.16 p 4-18

3D-14.17 p 4-18

3D-14.18 p 4-18

3D-14.19 p 4-18

3D-14.20 p 4-18

3D-14.21 p 4-18

3D-14.22 p 4-18

3D-14.23 p 4-18

3D-14.24 p 4-18

3D-14.25 p 4-18

3D-14.26 p 4-18

3D-14.27 p 4-18

3D-14.28 p 4-18

3D-14.29 p 4-18

3D-14.30 p 4-18

3D-14.31 p 4-18

3D-14.32 p 4-18

3D-14.33 p 4-18

3D-14.34 p 4-18

3D-14.35 p 4-18

3D-14.36 p 4-18

3D-14.37 p 4-18

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3D-14.39 p 4-18

3D-14.40 p 4-18

3D-14.41 p 4-18

3D-14.42 p 4-18

3D-14.43 p 4-18

3D-14.44 p 4-18

3D-14.45 p 4-18

3D-14.46 p 4-18

3D-14.47 p 4-18

3D-14.48 p 4-18

3D-14.49 p 4-18

3D-14.50 p 4-18

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3D-14.70 p 4-18

3D-14.71 p 4-18

3D-14.72 p 4-18

3D-14.73 p 4-18

3D-14.74 p 4-18

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3D-14.77 p 4-18

3D-14.78 p 4-18

3D-14.79 p 4-18

3D-14.80 p 4-18

3D-14.81 p 4-18

3D-14.82 p 4-18

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3D-14.96 p 4-18

3D-14.97 p 4-18

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3D-14.99 p 4-18

3D-15.00 p 4-18

3D-15.01 p 4-18

3D-15.02 p 4-18

3D-15.03 p 4-18

3D-15.04 p 4-18

3D-15.05 p 4-18

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3D-15.73 p 4-18

3D-15.74 p 4-18

3D-15.75 p 4-18

3D-15.76 p 4-18

3D-15.77 p 4-18

3D-15.78 p 4-18



# NOVICE QUESTION POOL ELEMENT 2

## SUBELEMENT 2A--RULES AND REGULATIONS 9 QUESTIONS

- 1.1 What are the five principles that express the fundamental purpose for which the Amateur Radio Service rules are designed?
- 2.1 What is the AMATEUR RADIO SERVICE?
- 3.1 What is AMATEUR RADIO COMMUNICATIONS?
- 4.1 What is an AMATEUR RADIO STATION?
- 5.1 What is that portion of an amateur radio license that conveys operator privileges?
- 6.1 What authority is derived from an amateur radio license?
- 7.1 What is an AMATEUR RADIO STATION?
- 8.1 What is a CONTROL OPERATOR?
- 8.2 What is the term for the amateur operator designated by the station licensee to also be responsible for the emissions from that station?
- 9.1 What is THIRD-PARTY TRAFFIC?
- 9.2 What is a third-party in amateur radio communications?
- 10.1 What are the amateur radio licenses?
- What are the Novice control operator frequency privileges in the:
  - 11.1 80 meter band?
  - 11.2 40 meter band?
  - 11.3 15 meter band?
  - 11.4 10 meter band?
  - 11.5 What, if any, frequency privileges are authorized to Novice control operators beside those in the 80, 40, 15, and 10 meter bands?
- 11.6 In what frequency bands is a Novice authorized to be the control operator of an amateur station?
- 11.7 What does the term FREQUENCY BAND mean?
- 11.8 What does the term FREQUENCY PRIVILEGE mean?
- 11.9 In what meter band is the frequency 3725-KHz?
- 11.10 In what meter band is the frequency 7125-KHz?
- 11.11 In what meter band is the frequency 21150-KHz?
- 11.12 In what meter band is the frequency 28150-KHz?
- 12.1 What emission type is authorized to Novice control operators?
- 12.2 What does the term EMISSION AIA mean?
- 12.3 What is the symbol for a transmission of telegraphy by on-off keying?
- 12.4 What does the term CI mean?
- 12.5 What, if any, privileges are authorized to Novice control operators beside emission AIA?
- 12.6 What telegraphy code may a Novice control operator use?
- 12.7 Which, if any, telegraphy codes may a Novice control operator use beside the International Morse code?
- 12.8 What does the term EMISSION mean?
- 12.9 What is the term used in the rules for a transmission from an amateur station?
- 12.10 What does the term EMISSION PRIVILEGE mean?
- 13.1 Which persons are eligible for an amateur operator license?
- 14.1 Which persons are eligible for an amateur station license?
- 15.1 What are the requirements for the mailing address each amateur licensee must furnish to the FCC?
- 15.2 Why must an amateur licensee be certain that the FCC has his/her current mailing address on file at all times?
- 16.1 Call signs assigned to amateur stations licensed to new Novices are from which call sign group?
- 16.2 What is the format of a Group D call sign?
- 16.3 What are the call sign prefixes for amateur stations licensed by the FCC?
- 16.4 What determines the number in an amateur station license?
- 17.1 For how long a period is an amateur operator license normally valid?
- 17.2 For how long a period is an amateur station license normally valid?
- 18.1 What is the maximum transmitting power ever permitted to be used at an amateur station transmitting on frequencies available to Novice control operators?
- 18.2 What is the amount of transmitting power that an amateur station must never exceed when transmitting on 3725-KHz?
- 18.3 What is the amount of transmitting power that an amateur station must never exceed when transmitting on 7125-KHz?
- 18.4 What is the amount of transmitting power that an amateur station must never exceed when transmitting on 21150-KHz?
- 18.5 What is the amount of transmitting power that an amateur station must never exceed when transmitting on 28150-KHz?
- 18.6 What amount of transmitting power may an amateur station use?
- 19.1 Who is responsible for the proper operation of an amateur station?
- 20.1 When must an amateur station have a control operator?
- 21.1 Who may be the control operator of an amateur station?
- 21.2 Who does the FCC presume is the control operator of an amateur station, unless documentation exists to the contrary?
- 22.1 Where must the control operator be when the station is in operation?
- 23.1 Where must the original or photocopy of a person's operator license be kept while serving as the control operator of an amateur station?
- 23.2 When would an amateur operator not have to show his/her original operator license to an authorized FCC representative requesting to see it?
- 24.1 Where must a person's station license be kept while the station is being operated at a place other than the station location specified on the license?
- 24.2 Where must a person's station license be kept while the station is being operated at the station location specified on the license?
- 24.3 When would an amateur operator not have to show his/her original station license to an authorized FCC representative requesting to see it?
- 25.1 How often must an amateur station be identified?
- 25.2 If you were an amateur operator, how would you correctly identify your amateur station communications?
- 25.3 What station identification, if any, is required at the beginning of a QSO?
- 25.4 What station identification, if any, is required at the end of a QSO?
- 25.5 What do the rules for amateur station identification require?
- 25.6 What is the fewest number of times an amateur station must transmit its station identification during a 15 minute QSO?
- 25.7 What is the fewest number of times an amateur station must transmit its station identification during a 25 minute QSO?
- 25.8 What is the fewest number of times an amateur station must transmit its station identification during a 35 minute QSO?
- 25.9 What is the longest period of time during a QSO that an amateur station does not need to transmit its station identification?
- 25.10 What is the fewest number of times an amateur station must identify itself during a 5 minute QSO?
- 26.1 With which amateur stations may an FCC-licensed amateur station communicate?
- 26.2 Under what circumstances may an FCC-licensed amateur station communicate with another station in a foreign country?

- 26.3 Which countries, if any, are listed in a current FCC Public Notice as having notified that their administrations object to amateur radio communications with stations in the United States?
- 27.1 Where permitted, what types of messages may be transmitted between amateur stations of different countries?
- 28.1 Under what circumstances, if any, may an amateur station be used to transmit messages for hire?
- 28.2 Under what circumstances, if any, may the control operator be aided to transmit messages from an amateur station?
- 29.1 Under what circumstances, if any, may the control operator cause false or deceptive signals or communications to be transmitted?
- 29.2 What is the term for the transmission from an amateur station of the word "MAYDAY" when no actual emergency has occurred?
- 30.1 Under what circumstances, if any, may the control operator cause unidentified radio communications or signals to be transmitted from an amateur station?
- 30.2 What is the meaning of the term UNIDENTIFIED RADIO COMMUNICATIONS OR SIGNALS?
- 30.3 What is the term for transmission from an amateur station without the required station identification?
- 31.1 Under what circumstances, if any, may the control operator of an amateur station interfere with or cause malicious interference to radio communications?
- 31.2 What is the meaning of the term "MALICIOUS INTERFERENCE"?
- 31.3 What is the term for transmission from an amateur station which are intended by the control operator to disrupt other communications in progress?
- 32.1 If you were an amateur operator and you received an Official Notice of Violation from the FCC, how promptly must you respond?
- 32.2 If you were an amateur operator and you received an Official Notice of Violation from the FCC, to whom must you respond?
- 32.3 If you were an amateur operator and you received an Official Notice of Violation from the FCC relating to a violation that may be due to the physical characteristic of your transmitting apparatus, what information must be included in your response?
- 32.3 What frequencies may a Novice control operator use in the amateur 10 meter band?
- 32.4 What frequencies may a Novice control operator use in the amateur 220-MHz band?
- 32.5 What frequencies may a Novice control operator use in the amateur 1270-MHz band?
- 32.5 What frequencies may a Novice control operator use in the amateur 23-centimeter band?
- 32.6 What emission types are Novice control operators permitted to use on frequencies from 28.3 to 28.5 MHz?
- 32.7 What emission types are Novice control operators permitted to use on frequencies from 20.1 to 29.3 MHz?
- 32.8 What emission types are Novice control operators permitted to use on the amateur 220-MHz band?
- 32.9 What emission types are Novice control operators permitted to use on frequencies from 1270 to 1295-MHz?
- 32.10 On what frequencies in the 10-meter band are Novice control operators permitted to transmit emission F1B (RTTY)?
- 32.11 On what frequencies in the 10-meter band are Novice control operators permitted to transmit emission J3E (single sideband voice)?
- 32.12 On what frequencies in the 220-MHz band are Novice control operators permitted to transmit emission F3E (FM voice)?
- 32.13 On what frequencies in the 220-MHz band are Novice control operators permitted to transmit emission A1A (CW)?
- 32.14 On what frequencies in the 220-MHz band are Novice control operators permitted to operate packet radio?
- 32.15 On what frequencies in the 1270-MHz band are Novice control operators permitted to transmit emission F3E (FM voice)?
- 32.16 On what frequencies in the 1270-MHz band are Novice control operators permitted to transmit emission A1A (CW)?
- 32.17 On what frequencies in the 1270-MHz band are Novice control operators permitted to operate packet radio?
- 32.18 What is the maximum transmitting power permitted an amateur station with a Novice control operator transmitting on the amateur 10-meter band?
- 32.19 What is the maximum transmitting power permitted an amateur station with a Novice control operator transmitting on the amateur 220-MHz band?
- 32.20 What is the maximum transmitting power permitted an amateur station with a Novice control operator transmitting on the amateur 1270-MHz band?
- 32.21 What amount of transmitting power may an amateur station with a Novice control operator use on the amateur 220-MHz band?
- 32.22 What does the term "digital communications" refer to?
- R2.23 What term is used to describe amateur communications intended to be received and printed automatically?
- 32.24 What term is used to describe amateur communications for the direct transfer of information between computers?
- 32.25 When must the licensee of an amateur radio station in portable or mobile operation notify the FCC of such operation?
- 32.25 When may you operate your amateur radio station at a location other than the one listed on your station license?

## SUBELEMENT 2B--AMATEUR STATION OPERATING PROCEDURES 2 QUESTIONS

- 1.1 What does the S in the RST report mean?
- 1.2 What does the R in the RST report mean?
- 1.3 What does the T in the RST report mean?
- 1.4 What is the meaning of the signal report RST 5 7 9 ?
- 1.5 What is the meaning of the signal report RST 5 9 9 ?
- 2.1 At what telegraphy speed should a CQ message be transmitted?
- 3.1 What is the meaning of the term ZERO BEAT?
- 3.2 Why should amateur stations in communication with each other zero beat?
- 4.1 Why should on-the-air transmitter tune-up be kept as short as possible?
- 4.2 How can on-the-air transmitter tune-up be kept as short as possible?
- 5.1 What is meant by the telegraphy abbreviation CQ?
- 5.2 When the control operator of amateur station W5YI is looking for a CQ QSO with anyone, what message should be transmitted?
- 6.1 What is meant by the telegraphy abbreviation DE?
- 6.2 What CQ message should the control operator of amateur station W5JUG send in order to answer a CQ message transmitted by amateur station K4OQV?
- 7.1 What is meant by the telegraphy abbreviation K?
- 7.2 When should the telegraphy abbreviation K be used?
- 8.1 What is meant by the telegraphy abbreviation SK?
- 8.2 When should the telegraphy abbreviation SK be used?
- 9.1 What is meant by the telegraphy abbreviation AR?
- 9.2 When should the telegraphy abbreviation AR be used?



- 10.1 What does QRS mean?
- 10.2 When should QRS be transmitted?
- 10.3 What Q signal should be transmitted to ask the control operator of another amateur station to send telegraphy slower?
- 11.1 What does QRZ mean?
- 11.2 When should QRZ be transmitted?
- 11.3 What Q signal should be transmitted to ask who is calling your station?
- 11.4 What is the format of a standard radiotelephone CQ call?
- 11.5 How is the call sign N660JR stated in Standard International Phonetics?
- 11.6 How is the call sign K7YKI stated in Standard International Phonetics?
- 11.7 How is the call sign N6SDT stated in Standard International Phonetics?
- 11.8 How is the call sign KL7MF stated in Standard International Phonetics?
- 11.9 What is the format of a standard RTTY CQ call?
- 11.10 What are three common sending speeds for RTTY signals on the 10-meter band?
- 11.11 What is the commonly used RTTY sending speed above 50-WPM?
- 11.12 What is one common use for an RTTY mailbox?
- 11.13 What is the term used to describe an automatic RTTY system used to store messages from amateurs for later retrieval by other amateurs?
- 11.14 What do the letters "TK" stand for?
- 11.15 What does the term "connected" mean in a packet-radio link?
- 11.16 What does the term "monitoring" mean on a frequency used for packet radio?
- 11.17 What is a digipeater?
- 11.18 What is the meaning of the term NETWORK in packet radio?
- 11.19 What is the term used to describe a method of interconnecting a packet-radio station used to retransmit data specifically addressed to be retransmitted by that station?
- 11.20 What is the term used to describe a method of interconnecting packet-radio stations so that data can be transferred over long distances?
- 11.21 What sending speed is commonly used for packet-radio transmissions on the 220-MHz band?
- 11.22 What is a good way to establish a contact on a repeater?
- 11.23 What is the main purpose of a repeater?
- 11.24 Why is there an "input" and "output" frequency to describe the operating frequency of any repeater?
- 11.25 When should simplex operation be used instead of a repeater?
- 11.26 What is an AUTOPATCH?
- 11.27 What is the term used to describe a device that allows repeater users to make telephone calls from their portable or mobile stations?

#### SUBELEMENT 2C—RADIO WAVE PROPAGATION 2 QUESTIONS

- 1.1 What type of propagation uses radio signals refracted back to earth by the ionosphere?
- 1.2 What is the meaning of the term SKY-WAVE PROPAGATION?
- 1.3 What is the area of weak signals between the range of ground waves and the first-hop called?
- 1.4 What is the meaning of the term SKIP ZONE?
- 1.5 What is the meaning of the term SKY-WAVE PROPAGATION?
- 1.6 What type of radio wave propagation makes it possible for amateur stations to communicate long distances?
- 1.7 During what time of day, if at all, does skip propagation occur in the 80 meter band?
- 1.8 During what time of day, if at all, does skip propagation occur in the 40 meter band?
- 1.9 During what time of day, if at all, does skip propagation occur in the 15 meter band?
- 1.10 During what time of day, if at all, does skip propagation occur in the 10 meter band?
- 2.1 What type of propagation involves radio signals that travel along the surface of the earth?
- 2.2 What is the meaning of the term GROUND-WAVE PROPAGATION?
- 2.3 Daytime communication on 3.725-MHz is probable via what kind of propagation when the stations are located a few miles apart but separated by a low hill blocking the line-of-sight path?
- 2.4 What is the usual effective range of ground-wave propagation compared to sky-wave propagation?
- 3.1 What is meant by the term SUNSPOT CYCLE?
- 3.2 What is the average length of the sunspot cycle?
- 3.3 During what part of the sunspot cycle does the 10 meter band offer the best opportunities for working DX?
- 3.4 During what part of the sunspot cycle does the 15 meter band offer the best opportunities for working DX?
- 3.5 Why is the amount of radiation reaching to earth from the sun important to amateur radio communication in the HF bands?
- 3.6 What are SUNSPOTS?
- 3.7 How many years make up the period of a typical sunspot cycle?
- 4.1 Why can a VHF or UHF radio signal that is transmitted toward a mountain often be received at some distant point in a different direction?
- 4.2 Why can the direction that a VHF or UHF radio signal is traveling be changed if there is a tall building in the way?
- 4.3 What type of antenna polarization is normally used for communications on the 40-meter band?
- 4.4 What type of antenna polarization is normally used for communication on the 80-meter band?
- 4.5 What type of antenna polarization is normally used for communications in the 15-meter band?
- 4.6 What type of antenna polarization is normally used for repeater communications on the 220-MHz band?
- 4.7 What type of antenna polarization is normally used for repeater communications on the 1270-MHz?

#### SUBELEMENT 2D—AMATEUR RADIO PRACTICE 4 QUESTIONS

- 1.1 How can an amateur station be protected against being operated by unauthorized persons?
- 2.1 Why should all antenna and rotator cables be grounded when an amateur station is not in use?
- 2.2 How can an amateur station be protected from damage due to a nearby lightning strike?
- 2.3 How can amateur station equipment be protected from damage due to lightning striking the electrical wiring in the building?
- 3.1 For proper protection from lightning strikes, what pieces of equipment should be grounded in an amateur station?
- 3.2 What is a convenient grounding point for an amateur station?
- 3.3 What should the chassis of each equipment in an amateur station be connected to in order to protect against electrical shock hazards?
- 4.1 What type of safety equipment should be worn when climbing an antenna tower?

- 4.2 For safety purposes, how high should all portions of a horizontal wire antenna be located?
- 4.3 What type of safety equipment should a person on the ground wear while assisting another person working on an antenna tower?
- 5.1 What is a likely indication that interference to a receiver is caused by front-end RF overload?
- 5.2 What is likely the problem when radio frequency interference occurs to a receiver regardless of frequency while an amateur station is transmitting?
- 5.3 What type of filter should be installed on a television receiver tuner as the first step in preventing RF overload from an amateur station transmission?
- 5.4 What is meant by RF OVERLOAD?
- 6.1 What is meant by HARMONIC RADIATION?
- 6.2 Why is harmonic radiation by an amateur station undesirable?
- 6.3 What type of interference may radiate from multi-band antenna connect to an improperly tuned transmitter?
- 6.4 What is the purpose of shielding in a transmitter?
- 6.5 What is the likely problem when interference is observed on only one or two channels of a television receiver while an amateur transmitter is transmitting?
- 6.6 What type of filter should be installed on an amateur transmitter as the first step in reducing harmonic radiation?
- 7.1 Why should the impedances of a transmitter final-amplifier circuit match the impedance of the antenna or feed line?
- 7.2 What is the term for the measurement of the impedance match between a transmitter final-amplifier circuit and the antenna or feed line?
- 7.3 What accessory is used to measure RF power being reflected back down the feed line from the transmitter to the antenna?
- 7.4 What accessory is often used to measure voltage standing wave ratio?
- 7.5 Where should a standing wave ratio bridge be connected to indicate the impedance match of a transmitter and an antenna?
- 7.6 Coaxial feed lines should be operated with what kind of standing wave ratio?
- 7.7 If the standing wave ratio is higher at 3700-kHz than at 3750-kHz, what does this indicate about the antenna?
- 7.8 If the standing wave ratio is lower at 3700-kHz than at 3750-kHz, what does indicate about the antenna?
- 8.1 What kind of standing wave ratio bridge reading may indicate poor electrical contact between parts of an antenna system?
- 8.2 High standing wave ratio bridge readings measure from a half-wave dipole antenna being fed by coaxial cable can be lowered by doing what to the antenna?
- 9.1 What precautions should you take when working with a 1270-MHz waveguide?
- 9.2 What precautions should you take when you mount a UHF antenna in a permanent location?
- 9.3 What precautions should you take before removing the shielding on a UHF power amplifier?
- 9.4 Why should you use only good-quality, well-constructed coaxial cable and connectors for a UHF antenna system?
- 9.5 Why should you be careful to position the antenna of your 220-MHz hand-held transceiver away from your head when you are transmitting?
- 9.6 How can you minimize RF exposure when you are operating your 220-MHz hand-held transceiver?
- 9.7 Why should you be careful to position the antenna of your 1270-MHz hand-held transceiver away from your head when you are transmitting?
- 9.8 How can you minimize RF exposure when you are operating your 1270-MHz hand-held transceiver?
- 9.9 How can you minimize RF leakage from your UHF antenna system?
- 9.10 Why should you make sure your UHF amplifier cannot be energized before you open the amplifier enclosure?
- 9.11 Why should you never look into a UHF waveguide when RF is applied?
- 9.12 Why should you be sure that your transmitter cannot be energized before you work your UHF antennas?

#### SUBELEMENT 2E—ELECTRICAL PRINCIPLES 4 QUESTIONS

- 1.1 What is VOLTAGE?
- 1.2 Electrons will flow in a copper wire when its ends are connected to what kind of source?
- 1.3 The pressure in a water pipe is comparable to what force in an electrical circuit?
- 1.4 What are the two polarities of a voltage?
- 2.1 What is meant by the term DC?
- 2.2 What type of electrical current does not periodically reverse direction?
- 3.1 What is meant by the term AC?
- 3.2 What type of current changes direction over and over again in a cyclical manner?
- 4.1 What is meant by the term ELECTRICAL CONDUCTOR?
- 4.2 What are three good electrical conductor materials?
- 5.1 What is meant by the term ELECTRICAL INSULATOR?
- 5.2 What are four good electrical insulating materials?
- 6.1 What is meant by the term OPEN CIRCUIT?
- 6.2 What is the term for an electrical circuit in which there can be no current?
- 7.1 What is meant by the term SHORT CIRCUIT?
- 7.2 What is the term for a failure in an electrical circuit that causes excessively high current?
- 8.1 What is meant by the term ENERGY?
- 9.1 What is consumed when a voltage is applied to a circuit causing an electrical current to flow?
- 10.1 What is meant by the term FREQUENCY?
- 11.1 What is the approximate length, in meters, of a radio wave having a frequency of 3.725-MHz?
- 11.2 What is the relationship between frequency and wavelength?
- 11.3 What is the approximate length in meters of a radio wave having a frequency of 21.150-MHz?
- 11.4 What is the approximate length in meters of a radio wave having a frequency of 7.125-MHz?
- 11.5 What is the approximate length in meters of a radio wave having a frequency of 28.150-MHz?
- 12.1 What type of frequency is 3,500,000-hertz?
- 12.2 RF is above what frequency?
- 13.1 What type of frequency is 350-hertz?
- 13.2 RF is below what frequency?
- 13.3 What type of frequency is 3,500-hertz?
- 14.1 What is the unit of electromotive force?
- 15.1 What is the unit of electrical current?
- 16.1 What is the unit of electrical power?
- 17.1 What is a HENRY?
- 17.2 What is a popular term for hertz?
- 18.1 What does the prefix MEGA- mean?
- 19.1 What does the prefix KILO- mean?
- 19.2 A frequency of 40,000-hertz is equal to how many kilohertz?



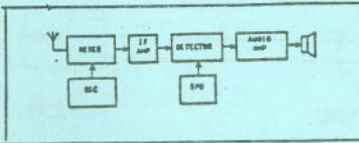
- 20.1 What does the prefix CENTI-mean?  
 21.1 What does the prefix MILLI-mean?  
 22.1 A current of 2000-milliamperes is equivalent to how many amperes?  
 22.1 What does the prefix MICRO-mean?  
 22.2 A current of 20 millionths of an ampere is equal to how many microamperes?  
 23.1 What does the prefix PICO-mean?  
 24.1 Your receiver dial is calibrated in megahertz and shows a signal at 1200-MHz. At what frequency would a dial calibrated in gigahertz show the signal?  
 24.2 Your receiver dial is calibrated in gigahertz and shows a signal at 1.27 GHz. At what frequency would a dial calibrated in megahertz show the signal?  
 24.3 Your receiver dial is calibrated in megahertz and shows a signal at 223.9 MHz. At what frequency would a dial calibrated in kilohertz show the signal?

## 2F—CIRCUIT COMPONENTS 2 QUESTIONS

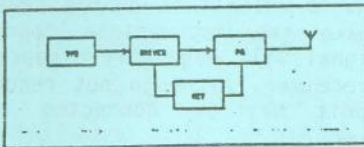
- 1.1 What is the general relationship between the thickness of a quartz crystal and its fundamental operating frequency?  
 1.2 What is the schematic symbol for a quartz crystal?  
 1.3 What advantage does a crystal controlled transmitter have over one controlled by a variable frequency oscillator?  
 1.4 What advantage does a variable frequency oscillator transmitter have over one controlled by a crystal oscillator?  
 2.1 What two internal components of a D'Arsonval meter interact to cause the indicating needle to move when current flows through the meter?  
 2.2 What does a voltmeter actually measure?  
 2.3 What does an ammeter measure?  
 3.1 Draw the schematic symbol diagram of a triode vacuum tube and label the elements?  
 3.2 Draw the schematic symbol diagram of a tetrode vacuum tube and label the elements?  
 3.3 Draw the schematic symbol diagram of a pentode vacuum tube and label the elements?  
 4.1 What device should be included in electronic equipment to protect it from damage resulting from a short circuit?  
 4.2 What happens to a fuse when an excessive amount of current flows through it?

## SUBELEMENT 2G—PRACTICAL CIRCUITS 2 QUESTIONS

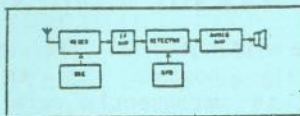
- 1.1 Draw a block diagram representing the stages in a simple crystal-controlled emission A1A transmitter?  
 1.2 What type of transmitter does this block diagram represent?



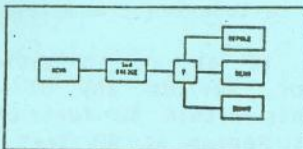
- 1.3 Draw a block diagram representing the stages in a simple emission A1A transmitter having a variable frequency oscillator?  
 1.4 What type of transmitter does this block diagram represent?



- 2.1 Draw a block diagram representing the stages in a simple superhetrodyne receiver capable of receiving emission A1A telegraphy signals?  
 2.2 What type of device does this block diagram represent?

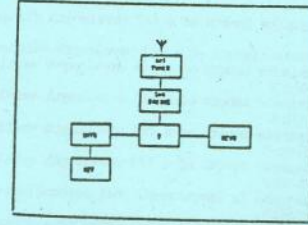


- 3.1 Draw a block diagram representing how two different antennas and a dummy load can be connected to the same transceiver?  
 3.2 What is the block labeled ? in this diagram?

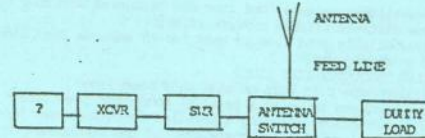


- 3.3 Draw a block diagram representing an amateur station including TRANSMITTER, RECEIVER, TELEGRAPH KEY, TR SWITCH, STANDING WAVE RATIO BRIDGE, ANTENNA TUNER, and ANTENNA.

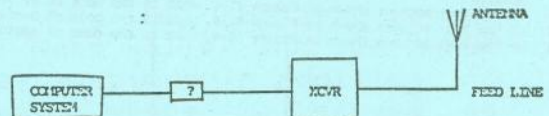
- 3.4 What is the block labeled ? in this diagram?



- 4.1 In an amateur radio station designed for radiotelephone operation, what station accessory will you need to go with your transmitter?  
 4.2 What is the unlabeled block (?) in this block diagram of a radiotelephone station?



- 4.3 In an amateur radio station designed for radioteletype operation, what station accessories will you need to go with your transmitter?  
 4.4 Draw a block diagram showing how the parts of a radioteletype station connect. Include at least a modem, transceiver, computer system or teleprinter, feedline, and antenna.  
 4.5 In a packet-radio station, what device connects between the radio transceiver and the computer terminal?  
 4.6 What is the unlabeled block (?) in this diagram of a packet-radio station?



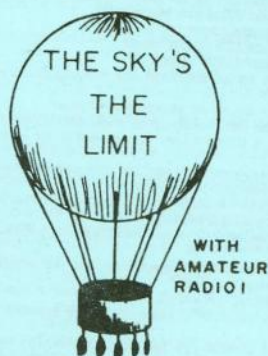
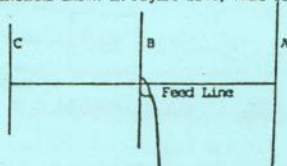
- 4.7 Where does a terminal-node controller connect in an amateur packet-radio station?

## SUBELEMENT 2H—SIGNALS AND EMISSIONS 2 QUESTIONS

- 1.1 Which type of emission is an INTERRUPTED CARRIER WAVE?  
 2.1 What does the term backwave mean?  
 2.2 What is the probable cause of BACKWAVE?  
 3.1 What does the term KEY CLICK mean?  
 4.1 What does the term CHIRP mean?  
 4.2 What can be done to an emission A1A transmitting power supply to avoid chirp?  
 5.1 What is a common cause of superimposed hum?  
 6.1 28,160-MHz is the 4th harmonic of what fundamental frequency?  
 6.2 What problem in a transmitter power amplifier stage may cause spurious emissions?  
 7.1 What emission designator describes the use of frequency shift keying to transmit radioteletype messages?  
 7.2 What keying method is used to transmit F1B radioteletype messages?  
 7.3 What type of signal is emission J3E?  
 7.4 What emission designator describes frequency-modulated voice transmissions?  
 7.5 What emission designator describes single-sideband suppressed-carrier (SSB) voice transmissions?  
 7.6 What type of signal is emission F3E?  
 7.7 What may happen to body tissues that are exposed to large amounts of RF energy?  
 7.8 What precaution should you take before working near a high-gain UHF or microwave antenna (such as a parabolic, or dish antenna)?  
 7.9 Why should you always locate your antennas so that no one can come into contact with them while you are transmitting?  
 7.10 What is a good way to prevent RF burns and excessive exposure to RF from your antennas?  
 7.11 What type of interference will you cause if you operate your SSB transmitter with the microphone gain adjusted too high?  
 7.12 What may happen if you adjust the microphone gain or deviation control on your FM transmitter too high?  
 7.13 If you are using an excessive amount of speech processing with your SSB transmitter, what type of interference are you likely to cause?  
 7.14 If you are operating SSB voice and another operator tells you that you are causing "splatter", what might be the cause of the interference?



- 1.1 What is the approximate length of a 1/2 wavelength dipole antenna for 3725-kHz?
- 1.2 What is the approximate length of a 1/2 wavelength dipole antenna for 7125-kHz?
- 1.3 What is the approximate length of a 1/2 wavelength dipole antenna for 21,125-kHz?
- 1.4 What is the approximate length of a 1/2 wavelength dipole antenna for 28,150-kHz?
- 1.5 How is the approximate length of a 1/2 wavelength dipole antenna calculated?
- 2.1 What is the approximate length of a 1/4 wavelength vertical antenna to resonate at 3725-kHz?
- 2.2 What is the approximate length of a 1/4 wavelength vertical antenna to resonate at 7125-kHz?
- 2.3 What is the approximate length of a 1/4 wavelength vertical antenna to resonate at 21125-kHz?
- 2.4 What is the approximate length of a 1/4 wavelength vertical antenna to resonate at 28150-kHz?
- 2.5 When a vertical antenna is lengthened, what happens to its resonant frequency?
- 3.1 What is COAXIAL CABLE?
- 3.2 What kind of antenna feed line is constructed of a center conductor encased in insulation which is then covered by an outer conducting shield and weatherproof jacket?
- 3.3 What are some advantages in using coaxial cable as an antenna feed line?
- 3.4 What commonly-available antenna feed line can be buried directly in the ground for some distance without adverse effects?
- 3.5 Which commonly-available feed line is best for an antenna feed line located near grounded metal objects?
- 4.1 What is PARALLEL CONDUCTOR FEED LINE?
- 4.2 How can television-type twin lead be used as a feed line?
- 4.3 What are some advantages in using a parallel conductor feed line?
- 4.4 What are some disadvantages in using a parallel conductor feed line?
- 4.5 What kind of antenna feed line is constructed of two conductors maintained a uniform distance apart by insulated spreaders?
- 4.6 What is the approximate length (in inches) of a 5/8-wavelength vertical antenna for the 220-MHz band?
- 4.7 Why do many amateurs use a 5/8-wavelength vertical antenna rather than a 1/4-wavelength antenna for their VHF or UHF mobile stations?
- 4.8 What radiation pattern is produced by a 5/8-wavelength vertical antenna?
- 4.9 What type of radiation pattern is produced by a Yagi antenna?
- 4.10 Approximately how long (in wavelengths) is the driven element of a Yagi antenna?
- 4.11 On the Yagi antenna shown in Figure 21-6, what is the name of Section B?
- 4.12 On the Yagi antenna shown in Figure 21-6, what is the name of Section C?
- 4.13 On the Yagi antenna shown in Figure 21-6, what is the name of section A?



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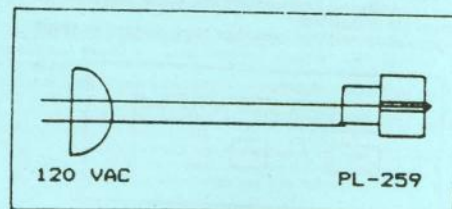
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### **THE ULTIMATE FILTER**

This item was designed by Jay Hennigan, WB6RDV and first publicized in the Santa Barbara Key Klix newsletter.



The device in the diagram above serves many useful purposes:

1. Convince the unwanted interfering station to install it on his transmitter and make the appropriate connections. His signal will magically disappear from your receiver. Although not recommended, the unit may be connected to your receiver...
2. Use it as an inexpensive burgular alarm for your antenna system. Anyone attempting to steal antennas protected by this device will be quite alarmed.
3. Use it as a TVI eliminator. Momentarily connect it to the TV receiver to permanently cure all forms of television interference. Stubborn cases may require treatment of the TV viewer as well.
4. Use it as a CB dummy load. Tell the CB dummy to tune his transmitter into it.
5. Use it as an ionization sample calibrator. Perform any of the above experiments within 50 feet of a smoke detector. Repeat at 40 feet, then 30, etc., making note of the detector sensitivity for future comparison.

I am sure you can come up with many more inovative uses for this handy device and that it will be a welcome addition to your hamshack.



## EMERGENCY PREPARATION

by Don Giles

WD6FGU

While reading a newsletter sent by our ARRL representative from Seattle my eye was caught by a response from one of the hams in W7 land. The fellow was questioning the validity of all of this emergency preparation done by groups like RACES and ARES. I too, at times, had thought the time and effort spent in networks and practice drills was not needed but I remained a ARES volunteer and basically enjoyed this contact with the ham community. ARES came to mean much more to me in February, 1986.

We had lived in Napa, California since 1980 and I was involved in the local ham activities on VHF. Our repeater was on Mt. St Helena near the northern end of Napa valley and our ARES group used it for our net on Wednesday evenings in addition to our VIP program for the Forest Service where we served as communications operators for a fire spotting program during the summer months. Early February, 1986 brought torrential rains to the Napa area and most of northern California. We received over 6" of rain in one 24 hour period which came after days of steady downpours that had completely saturated the ground. The resulting runoff was carried into the Napa River and down the 26 mile long valley toward the top of San Francisco Bay. The town of Napa lies in the flood plain at the southern end of the valley and has a history of serious flooding.

The Napa River overflowed its banks as far upvalley as St. Helena and Yountville but the city of Napa and its 52,000 population were to take the worst shock of the floods. Our ARES group was put on alert on Sunday evening and mobilized early Monday morning. The group maintained a 2 meter rig at Red Cross headquarters and had been in the process of some packet experimentation but was not entirely equipped for packet operation. The phone and electric utilities were intermittent and the authorities were evacuating flood victims to temporary housing in churches and high school buildings.

I was assigned to a local evacuation center near my home in east Napa since the bridges were under water and it was not possible to cross town. We served as a "holding" center for those flood victims who required a temporary place until relatives could pick them up. At times, my rig was the sole communications link from the center to Red Cross headquarters and was used for all sorts of traffic. We found relatives, ordered blankets and supplies, checked weather conditions and handled administrative matters for the Red Cross. I was there until 2200 hrs when we closed for the night. I reported to the high school gym at 0800 the following morning and found about 500 people sleeping and living on the gym floor. I worked at the gym until 0100 hrs the following morning using generator power and

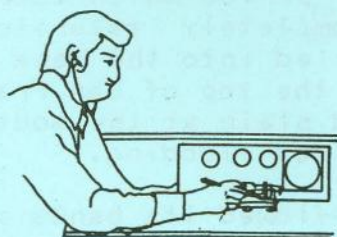


intermittant public utility power to provide communications with headquarters.

Over 5,000 people were relocated during the Napa flood and 1,500 were housed in temporary shelters staffed by the Red Cross. Of course, the flood destroyed the homes of those who could least afford it and who were without means to secure other shelter. The shelters were maintained until Thursday when most were able to return to their homes and start the cleaning process.

The ARES group was called again on Saturday to help with damage assessment throughout the valley. We provided mobile communications for damage assessment teams which directed assistance to those residents requiring help.

This effort was not perfect by any means but our ability to respond with a trained, knowledgeable group of radio operators using equipment that was capable of independent performance was the key to maintaining vital communications links between relief agencies and those in need. So, of course, the result is worth the training and practice involved. This type of situation doesn't happen very often but requires quick, efficient response by capable people when it does occur.



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## Kerry Robson

**Very soon Elections for the Iditarod Board of Directors will be held. Kerry will do a great job on the Board. For those of you who are members of Iditarod, please vote for Kerry Robson.**

Kerry has been an Iditarod volunteer every year since 1983. That's five years. She is co-owner /manager of Computerland. Sound Fiscal Management is one of her strong concerns for Iditarod as well as fostering an atmosphere of fun for volunteers.

**Support Kerry Robson.**

**Jim Larsen, AL7FS  
1987 Iditarod  
Communications Coordinator**





"You say you're from the FCC . . . . .?"

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